

No. 1, 5, 7

1.) $\frac{dA}{dt} = kA$

5.) $\frac{dG}{dt} = \frac{KN}{A}$

7.) A.) $\frac{dA}{dt} = g$
 $\int \frac{dA}{dt} = \int g$
 $\frac{dv}{dt} = gt + v_0$
 $\frac{dp}{dt} = \frac{1}{2}gt^2 + v_0t + x$

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B.) $\frac{dp}{dt} = \frac{1}{2}gt^2 + v_0t + x$
 $x = 100 = \frac{1}{2}g(t)^2 + 0(t) + 100$
 $v_0 = 0 \quad -100 = \frac{1}{2}g(t)^2$
 $-200 = g(t)^2$
 $\frac{-200}{g} = t^2$
 $t = \sqrt{\frac{-200}{g}}$
 $t = 2.49s$

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C.) This is different from what we were predicting because we completely ignored air resistance.